

CLAIMS

1. An information recording apparatus for recording information onto an information recording medium comprising a plurality of recording layers, by
5 irradiating the information recording medium with laser light for recording,
said information recording apparatus comprising:
a setting device for setting a preferable irradiation condition of the laser light which is preferable to one recording layer in which the information is scheduled to be recorded, out of the plurality of recording layers, for each recording state of another
10 recording layer out of the plurality of recording layers; and
an irradiating device for irradiating the one recording layer with the laser light in the set preferable irradiation condition.
2. The information recording apparatus according to claim 1, wherein said
15 setting device sets at least one of a pulse width, pulse intensity, a pulse shape, and recording strategy of the laser light, which are preferable to the one recording layer.
3. The information recording apparatus according to claim 1, wherein
said information recording apparatus further comprises a judging device for
20 judging a difference of whether the another recording layer is unrecorded or recorded, as for each recording state, and
said setting device sets the preferable irradiation condition, in accordance with a judgment result by said judging device.
- 25 4. The information recording apparatus according to claim 3, wherein said judging device judges the difference of whether or not the another recording layer is

unrecorded or recorded, by each predetermined area unit, by collectively scanning recording areas in the another recording layer, before the information is recorded into the one recording layer.

- 5 5. The information recording apparatus according to claim 3, wherein said judging device judges the difference of whether or not the another recording layer is unrecorded or recorded, by referring to table information which indicates the difference of whether or not the another recording layer is unrecorded or recorded, by each predetermined area unit in recording areas in the another recording layer.

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6. The information recording apparatus according to claim 1, wherein
at least one of the plurality of recording layers has a management information area in which preferable irradiation condition information for defining the preferable irradiation condition for each recording state of the another recording layer, is recorded,

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said information recording apparatus further comprises a first reading device for reading the preferable irradiation condition information from the management information area, and

- said setting device sets the preferable irradiation condition on the basis of the read preferable irradiation condition information.

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7. The information recording apparatus according to claim 1, wherein
said information recording apparatus further comprises:
a test-writing controlling device for controlling said irradiating device to test-write data for test writing into the one recording layer, in both (i) an unrecorded area in which the another recording layer is unrecorded and (ii) a recorded area in

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which the another recording layer is recorded; and

a second reading device for reading the data for test writing, from the one recording layer in both the unrecorded area and the recorded area in which the test writing is performed, and

5 said setting device sets the preferable irradiation condition, on the basis of the read data for test writing.

8. The information recording apparatus according to claim 7, further comprising a first storing device for storing preferable irradiation condition
10 information which indicates the preferable irradiation condition set by said setting device.

9. The information recording apparatus according to claim 1, wherein
 at least one of the plurality of recording layers has a management
15 information area in which preferable irradiation condition information for defining the preferable irradiation condition in only one of (i) a case where the another recording layer is unrecorded and (ii) a case where the another recording layer is recorded, is recorded,

 said information recording apparatus further comprises a third reading device
20 for reading the preferable irradiation condition information from the management information area, and

 said setting device sets the preferable irradiation condition on the basis of the read preferable irradiation condition information in the one case, and sets the preferable irradiation condition on the basis of (I) the read preferable irradiation
25 condition information and (II) relationship information which indicates a relative relationship between a preferable irradiation defined for the other case and a

preferable irradiation condition defined for the one case, in the other case out of the unrecorded case and the recorded case.

10. The information recording apparatus according to claim 9, wherein

5 the preferable irradiation condition is expressed as a predetermined parameter value related to the laser light, and

the relationship information includes information which indicates a ratio or difference of the predetermined parameter value in the other case, with respect to the predetermined parameter value in the one case.

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11. The information recording apparatus according to claim 9, wherein the relationship information is recorded in the management information area together with the preferable irradiation condition information.

15 12. The information recording apparatus according to claim 9, wherein

said information recording apparatus further comprises a second storing device for storing the relationship information, and

said setting device sets the preferable irradiation condition, on the basis of the read preferable irradiation condition information and the relationship information
20 stored in said second storing device, in the other case.

13. An information recording method of recording information onto an information recording medium comprising a plurality of recording layers, by irradiating the information recording medium with laser light for recording,

25 said information recording method comprising:

a setting process of setting a preferable irradiation condition of the laser light

which is preferable to one recording layer in which the information is scheduled to be recorded, out of the plurality of recording layers, for each recording state of another recording layer out of the plurality of recording layers; and

an irradiating process of irradiating the one recording layer with the laser
5 light in the set preferable irradiation condition.

14. An information recording medium comprising a plurality of recording layers to record therein information by irradiating the information recording medium with laser light for recording, wherein

10 at least one of the plurality of recording layers has a management information area in which preferable irradiation condition information is recorded, in which the preferable irradiation condition information is to define a preferable irradiation condition of the laser light which is preferable to one recording layer in which the information is scheduled to be recorded, out of the plurality of recording
15 layers, for each recording state of another recording layer out of the plurality of recording layers.

15. An information recording medium, comprising a plurality of recording layers to record therein information by irradiating the information recording medium with
20 laser light for recording, and

having a first test writing area in which the information is recorded in another recording layer out of the plurality of recording layers and a second test writing area in which the information is not recorded in the another recording layer, in order to obtain a preferable irradiation condition of the laser light which is preferable to one
25 recording layer in which the information is scheduled to be recorded, out of the plurality of recording layers.